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New Outlets for Farm Products

By Louis B. Howard

With chemistry as their tool, the Department of Agriculture's four regional research laboratories during their first 5 years of operations have sought out many new and wider outlets for American farm products.

One of these laboratories is located in each of the country's major farm producing areas--at Philadelphia, New Orleans, Peoria, and at Albany, Calif. Each laboratory cost about 2 million dollars to build and equip, and receives an annual appropriation of about 1 million dollars to conduct its research. The four laboratories, operated by the Department's Bureau of Agricultural and Industrial Chemistry, employ about 1,000 workers--more than half of them chemists, physicists, and other scientists.

Actually, the Department had been searching for industrial uses for farm products for 25 or 30 years before these laboratories were set up, but the work was only a side line. But during the late 1920's the chemurgy movement called for an increased industrial utilization of farm crops. The idea caught on among other private groups and some of the State agricultural colleges and other public agencies, but interest was sectional and spotty until the heavy farm surpluses of the early 1930's began to beat down prices. This depression served to unite, expand, and strengthen the chemurgy movement and led to the authorization by Congress in 1938 of the four laboratories and the Federal Government's entry into industrial utilization research on a Nation-wide scale.

Did War Service

Fortunately these laboratories were completed and staffed in time to aid in wartime research. More than 150 research projects dealing with the use of agricultural commodities in the war were carried on in these centers. Scientists in the Northern Laboratory, at Peoria, quickly increased the yield of penicillin so it could be produced on a commercial scale. They did this by feeding the mold that produces penicillin a new diet composed largely of two agricultural products--corn steeping liquor, a byproduct from the manufacture of corn starch, and lactose or milk sugar. About 6 million pounds of milk sugar and 12 million pounds of corn steeping liquor, valued at $1,560,000 and $234,000 respectively, are used annually in the production of penicillin. The value of penicillin produced in 1945 is estimated at more than 100 million dollars, but no money value can be placed on the human lives saved as a result of the large-scale commercial production made possible by the laboratory scientists.

Wartime research in the Southern Laboratory, at New Orleans, showed that better tire cord can be made from cotton by using varieties of cotton selected specifically for this purpose on the basis of their physical properties. Passenger car tires in the popular 6.00-16 size, made

from standard and improved cotton cord, ran over 68,000 miles with one recapping at a sustained highway speed of 60 miles an hour--a speed that cuts rubber off tires rapidly. These tests were made by the Army Ordnance Department at its proving grounds at San Antonio Tex. In the 7.00-20 light truck tire tests, in rear-wheel positions tires made from a selected variety of cotton gave 300 percent more mileage than tires made from regular commercial cotton cord. These tests showed that cotton is adequate for making passenger car tires, and that the mileage of light truck tires is definitely increased when they are made from selected varieties of cotton.

Buckwheat and Capillaries

Chemists in the Eastern Laboratory, at Philadelphia, appear to be on the verge of making a hero out of the lowly buckwheat plant. It is being used to produce a drug called rutin, which is extracted from the leaves and blossoms of the green plant. Rutin looks promising for he treatment of sufferers from high blood pressure associated with increased capillary fragility. Clinical tests made thus far indicate that rutin is beneficial in strengthening the weak capillaries. During the last 30 months more than 1,200 cases have been studied at the University of Pennsylvania Medical School and its affiliated hospital. About 20 percent of the patients treated with rutin were suffering from fragile capillaries. Of these patients, 88 percent were restored to normal health through its use.

Rutin is a tasteles, bright-yellow powder that can be taken in tablet form. It is nonpoisonous and keeps well under ordinary conditions. The job of the laboratory scientists is to work out practical and economical methods for extracting the drug on a commercial scale. The clinical work is done by medical specialists. During the summer of 1945 about 300 pounds of rutin were extracted from green buckwheat plants by four large drug manufacturers under the technical guidance of chemical engineers from the Philadelphia laboratory. In 1946 the quantity will be much larger. Since the plant is cut green instead of being allowed to mature, it is possible to get two and sometimes three crops of buckwheat in one season when it is used for rutin. By a rough estimate, it will require about 10,000 pounds of rutin to meet the experimental demand for the drug this year, and more than a million pounds a year to meet medicinal requirements should the present promising results be substantiated and the drug be placed on the open market. This would mean that about 50,000 acres of buckwheat would be needed each year to produce the drug.

Western Laboratory scientists, at Albany, Calif., are trying to find a market for chicken feathers. Like wool, hair, hoofs, and horns, feathers are composed largely of a fibrous protein called keratin. About 175 million pounds of chicken feathers are wasted each year. Fundamental research looking to the industrial utilization of at least a part of them, in progress in the Western Laboratory for several years, has led to the production on a pilot-plant scale of keratin or chicken feather fiber. The wet strength of the new fiber is still too low for practical purposes, but the chemists hope to solve that problem eventually.

Scientists in the Peoria laboratory are at work on another synthetic fiber called "zein." It is an artificial textile fiber that appears to be suitable for blending with rayon, cotton, and wool for use in knitting yarns and woven fabrics. The finished fibers have a rich creamy appearance. The dry strength of zein equals that of wool, but since its wet strength is only about half its dry strength, more research is needed. Washing with soap solutions does not damage zein. It is probable that the spinning and finishing of the fibers can be made continuous--a decided improvement over the batch method of production. One commercial company is preparing to begin production research on a pilot-plant scale and the textile industry generally seems to be interested in the product.

Research in the Southern Laboratory has resulted in the production on an experimental scale of a peanut-protein fiber. Called "sarelon," the new fiber has a light cream color and a pleasing softness about midway between that of silk and wool. It takes dyes similar to those used on silk and wool, and shrinks very little in hot water. It resembles wool also in its heat-insulating and moisture-absorbing properties. It may be used alone or mixed with cotton or wool fibers. Its major weakness is its low wet strength.

Before the war, imported hog bristles were used extensively in the manufacture of some of the paint brushes and other brushes used in this country. Bristles imported from China were better than American domestically produced bristles because here hogs are slaughtered at an earlier age than in China. The Eastern Laboratory has developed what appears to be a satisfactory continuous process for producing casein fiber for brush making, and a commercial firm has built a factory to manufacture the product as soon as equipment can be installed.

These synthetic fibers are being developed not to replace cotton, wool, or other natural fibers, but in the hope of making the natural fibers stronger. The scientists hope to improve textile materials by combining the special qualities of the new synthetics with the tried and true qualities of the natural fibers.

At the beginning of the war the Navy was using hominy grits to clean carbon from aircraft engines. But hominy is a food, and food was badly needed as such. In searching for an available nonfood material that could do the same job, the Northern Laboratory developed a soft grit blasting material from corncobs and rice hulls, both of them for the most part farm waste. The mixture is composed of 60 percent of ground corncobs and 40 percent of whole rice hulls and is used in ordinary air-blasting equipment.

The new method has several advantages over other cleaning methods. It removes carbon, oil, and other deposits and gives the metal a clean, dry surface without grinding any of it away. It is about 10 times faster

than hand work. As a result of this research, done first on a laboratory scale and later on a pilot-plant scale, the soft-grit blasting method is now going into comercial use. One large automobile rebuilding company has adopted it for cleaning pistons, fuel and water pumps, and carburetors. Another company uses it to clean aluminum foundry cores. A glass company uses it to clean its glass molds, and a large oil company uses it to clean paint from the roofs of its huge gasoline storage tanks for the reason that it does not produce sparks.

In the Florida Everglades a large sugar corporation has begun the large-scale production of sweetpotato starch in its new 7-million-dollar plant. This plant, the largest of its kind, was built on the faith the company officials had in the work on sweetpotato starch the Bureau had done over a period of more than 10 years. Scientists in the Southern Laboratory, where the sweetpotato utilization work is done, supplied a great deal of the technical information needed to build and begin to operate the plant. It consumes the annual sweetpotato crop from about 12,000 acres. In addition to from 10 to 13 pounds of starch, a bushel of these potatoes yields about 5 pounds of cattle feed. This feed contains 85 to 90 percent of the feeding value of corn, and it is fed along with other mixtures to the more than 2,000 head of cattle being continuously fattened on the company's property.

Research is also being done to develop a way of producing synthetic liquid motor fuel from so-called farm-waste materials. The process makes possible the chemical conversion of corncobs, sugarcane,bagasse, peanut shells, flax shives, and cottonseed hulls into liquid motor fuels and other commercially valuable products. Results thus far indicate that a ton of corncobs or cottonseed hulls will produce 90 to 95 gallons of liquid motor fuel--about half of it ethyl alcohol. A two-story factory-type building has been built on the grounds of the Northern Laboratory, the equipment is being installed, and the semicommercial plant, when it gets into production about the first of the year, will consume about 6,500 pounds of raw residue material in each 8 hours of operation. Corncobs will be tried first. It is estimated that half of the annual 200 million tons of U. S. farm waste might be utilized in the production of motor fuel.

Pilot-Plant Research

One reason for the program's accomplishments--and those described are merely a few examples--is that a third of the space in each laboratory is used for pilot-plant research. This is research that carries promising results beyond the test-tube stage into semicommercial production, where more comprehensive data may be obtained.

Although the laboratores were established primarily to find industrial outlets for farm products,the laboratory searchers attempt to find new food outlets also. "Velva Fruit" is one of the results. This new product, which resembles ice cream,can be made from fully ripened fruit. A great deal of ripened fruit is ofter lost because it is frequently too

soft for shipment to fresh-fruit markets. Several hundred thousand gallons of the new whole-fruit dessert were sold on the commercial market in 1945.

Research is being conducted in the four laboratries on various commodities as follows: Northern--corn, wheat, and other cereal crops; soybeans and other oilseed crops; and agricultural residues such as straws and stalks. Eastern--tobacco; apples; white potatoes; milk products; vegetables; animal fats and oils; and tanning materials, hides, and skins. Southern--cotton; sweetpotatoes; and peanuts. Western--fruits; vegetables; white potatoes; wheat; alfalfa; and poultry products and by-products.

MEATS

The Office of Economic Stabilization announced on October 19 that its regulation providing for the grading and grade labeling of meat had been revoked. The regulation, which had been designed to implement OPA's pricing orders, had become obsolete when meat was removed from price control. The action means that the purple Federal grade stamp will be missing from some of the meat sold.

During the war, 90 to 95 percent of all meat sold in the United States was federally graded. It was stamped "Choice," "Good," "Commercial," or "Utility" as judged by an impartial official grader.

The extent to which Federal grading is continued now depends largely on the consumer demand for meat bearing the Federal stamp. The grading service is still available to packers and slaughterers. Applications should be addressed to the Livestock Branch of the Production and Marketing Administration.

POULTRY INDUSTRY ADVISORY COMMITTEE ESTABLISHED

Establishment of a Poultry Industry Advisory Committee that will help PMA to plan programs and do its part in solving industry problems was announced November 12.

The membership was selected to represent all geographic areas and the various segments of the industry. It is composed of seven producer and cooperative representatives, seven marketing and processing representatives, a hatchery industry representative, a feed manufacturer representative, and a retail food store representative.

The Future of Dry Milk

By Stephen O'Dea

Dry milk production is not on the down grade today. And although the time may never come when most milk drinkers will prefer dry milk mixed with water to what they now buy in bottles, the substitution of dry for fluid milk is one of the developments in the last few years which indicate that the wartime rise in dry milk use may continue.

School Lunch Program

Here is an example of the product's potential use as a substitute. In speaking of U. S. Department of Agriculture programs to improve the nutritional well-being of the Nation, Robert H. Shields, Production and Marketing Administrator, said recently: "New features are being added [to the Department's School Lunch Program], such as the dry skim milk program to be started on a trial basis this fall. Sixteen schools in areas where fresh milk is not available for children's lunches will receive dry skim milk to serve as a beverage and to use in cooking. If the program is a success, its blessings might well be extended. This could result in a very significant gain because in several States fluid milk is still lacking in 40 percent of the school lunches served."

The increased use of dry milk in areas where consumption of milk and its products is low would improve the health and well-being of the children. Although milk is one of the most important items of the child's diet, a very great many American children do not get enough of it. In the School Lunch Program, the desired nutritional standards are not actually attained without milk. Nutritional studies show that where milk consumption is low, there are usually deficiencies in riboflavin and calcium—two nutrients particularly important for children. For example, when children whose diet was deficient in riboflavin and calcium were given dry milk experimentally, their growth showed a marked improvement. The value of the product was also demonstrated on a large scale in England when it helped to compensate for wartime dietary deficiencies.

If the lunches served without milk under the 1945-46 Federal School Lunch Program in 12 Southern States had included dry milk, the amount consumed would have run to about 10 million pounds. The current program very probably will increase also the consumption of dry milk and other dairy products by the school children's families and friends. This will help farmers continue to get more for their milk by marketing it as fluid whole milk.

Production of dry milk had reached 400 million pounds before the war. Very little of it had been used as a reconstituted beverage, most of it going into bakery products and other prepared human foods, and animal feed.

The war food production program was meant both to increase production of fluid milk and to encourage sales by dairy farmers of whole milk rather than farm-separated cream. The aim was to make the nonfat solids in the skim milk available as human food rather than to have them fed to livestock or go to waste on the farm. The Government began a program of financing these facilities in 1941 when lend-lease and military demands for dairy products greatly increased. To help meet the needs of our allies and our armed services, U. S. production of dry milk was more than doubled during the war.

When the facilities were installed, the probability that they would outlast the war was taken into consideration. As soon as the plants were erected, most local farmers stopped delivering farm-separated cream and began delivering whole milk to the plants. And prewar experience indicates that once farmers change over and part with their hand separators, few of them want to go back to delivering farm-separated cream.

It is not feasible to close down the drying facilities and shut off these outlets for farmers' whole milk. The Secretary of Agriculture has recommended that the operation of Government-owned dairy facilities be continued on the existing contract basis. The operators should have the option of continuing to lease or of buying the facilities.

Government-Owned Facilities

Twenty-six Government-owned facilities for producing dairy products are located in 5 States: Minnesota, 15; Iowa, 5; Wisconsin, 4; Michigan and North Dakota, 1 each. Some of these projects include only the equipment for dairy processing and dehydrating; other include new buildings, installed dehydrating equipment, and milk-receiving and -processing equipment in the creameries associated with the projects. Sixteen complete spray-type dehydrating projects include land and buildings, 1 spray-type dehydrating unit is installed in a plant that already existed, and 8 atmospheric roller dehydrating units are installed in operating creameries for processing milk from member patrons.

The cost of the land, buildings, and milk-handling and -dehydrating facilities was slightly over $5,900,000. The annual rent varies between 9 and 11 percent of the cost of buildings and equipment.

Financing the facilities with lend-lease funds, the U. S. Department of Agriculture contracted with the sponsoring cooperative for construction of the plant and installation of the necessary equipment. After a project was completed it was taken over at a cost certified by the Farm Credit Administration or the Farm Security Administration, which provided interim financing. Running with the contract was a lease, covering operation of the facility by the sponsoring cooperative, for a term of 5 years and renewable at the lessee's option for 5 years additional.

Whole milk received from milk producers is separated at the associated creameries, the skim milk being taken to the central drying plant for dehydrating. Creameries in which drying equipment has been installed process their own milk. The production by the spray and roller processes of nonfat dry milk solids, 3,788,742 pounds in 1942, had increased by 1945 to 98,650,529 pounds.

Dry milk is made in two ways—by the "spray" process and the "roller" process. High-quality spray dried milk, packaged to retain its original flavor, is greatly superior to some of the earlier forms and to lower quality forms still marketed for other than beverage use. It does not deteriorate (develop off-flavors or get lumpy) if kept in a cool, dry place suitable for flour storage. It is easy to reconstitute and on cooling closely resembles fresh milk after the cream has been removed.

Although dry whole milk contains fat and vitamin A, which are not contained in dry milk, diets are not so frequently deficient in these two important nutrients, which can be obtained from sources other than milk. On the other hand, dry milk is an excellent and inexpensive source of calcium and riboflavin, the two nutrients frequently deficient in the diet. Moreover, a surplus of dry milk is much more likely to develop than a surplus of dry whole milk.

Earlier Utilization of Nonfat Solids

Of the total of milk produced between 1930 and 1940, the proportion of nonfat dry milk solids used for food increased moderately. The increase was the result of a sizable expansion in the production of manufactured whole milk products such as evaporated milk, whole milk cheeses, and dry whole milk, as well as nonfat dry milk. In the 1930's an average of half the total domestic supply of nonfat solids was utilized for human food. During the war this fraction increased sharply. The rise in fluid milk consumption, which accompanied the rise in incomes and the stable prices to consumers, was almost phenomenal Another important factor in increasing the utilization of nonfat solids was the increased production of evaporated milk, Cheddar cheese, and dry nonfat solids partly for military uses and for export. The proportions of total nonfat solids utilized for human consumption during the war years were: In 1941, 52 percent; 1942, 53 percent; 1943, 54 percent; 1944, 56 percent; 1945, 58 percent. In 1946 the percentage will exceed the high one for 1945, and any recession in 1947 from the 1946 peak will probably be slight.

Because of the sharp increase in the utilization of nonfat milk solids, a substantial increase in civilian consumption was possible even though large quantities of these solids were exported. In 1945, the annual per capita consumption was 28 percent greater than during the period 1935-39. On the same basis consumption of nonfat solids in fluid milk and cream had increased by 29 percent, consumption of manufactured products showed no significant change, and consumption of products made from

skim milk (such as dry nonfat solids, cultured buttermilk, and milk drinks) had increased by 25 percent.

Whether dry milk facilities are to be expanded or modernized is of course up to the individual plant operators. Important to their decisions is a consideration of the extent to which raw material supplies will be available and of the prospects for the production and marketing of other skim milk products than nonfat dry milk. For example, in California the demand for fluid milk has increased with the sharp and continued increase in population. Farm milk production has also increased in that State, but possibly not in proportion to the population increase. Such a disparity may affect the available supply of surplus and skim milk, and channel a larger part of the California milk production into fluid market use.

It should also be realized that there is little room for a further diversion from farm-separated cream to whole milk deliveries in California as compared with the United States as a whole. While a diversion of farm marketings to further sales of whole milk will probably continue in other sections of the country and increase the relative amount of nonfat solids in milk available for manufacture, the prospect of increased diversion in California is negligible--chiefly because most California milk is delivered as whole milk already.

Prospects for Other Skim Milk Products

In some Sections along the west coast a rather considerable market has developed for such skim milk products as cottage cheese, chocolate drink, cultured buttermilk, condensed skim bulk (sweet and plain), and dried casein. The present U S. production of casein is far below domestic requirements, most of our supply being imported. To provide for the production and sale of casein also may be a relatively better way to handle any sharp or short-run seasonal surplus of skim milk than to install and operate additional drying equipment. In addition, certain other skim milk products might be produced at somewhat less additional expense, and satisfactory markets might be developed.

When the U. S. production and disposition of milk produced on farms is taken into consideration, it is evident that the supply of available nonfat milk solids is going to be considerably greater than before the war. Since dry milks are the major outlet for these solids and since existing facilities seem capable of more than their present output, some expansion of the U. S. production of nonfat milk solids seems likely. This expansion may continue as long as prices are high enough to cover production and marketing costs and at least a moderate return to producers for nonfat solids.

It should be borne in mind that a large part of our wartime increase in dry milk production was exported. A decline in the overseas demand might bring on burdensome surpluses that would call loudly for

the development of new uses for the product in domestic markets. If exports do not continue at near current rates, it may be asked whether domestic requirements will increase enough to offset the loss in exports plus whatever increase may come in production costs. It is possible that some skim milk may have to be diverted to products other than nonfat dry milk solids.

Although the long-run postwar demand for powder is uncertain, one thing is sure: More thinking needs to be done about the development of markets for nonfat dry milk than for any other manufactured dairy product.

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TOBACCO

The newly formed Burley Tobacco Warehousemen's Association, at a business meeting in Lexington, Ky., on November 6, went on record as being wholly opposed to speculative buying by any warehouseman." The burley markets are scheduled to open December 2.... Civilian Production Administration assistance has been given on 5,000 tons of steel for flues, half to be delivered by January 15 and the other half by March 31. Also short are hogshead materials, particularly oak and pine. The situation on plywood for hogsheads has eased somewhat.... A preliminary tabulation on the October 25 burley tobacco referendum, announced on October 28, showed that of the 116,563 votes counted at that time, 111,863 or 95.9 percent of the voters favored marketing quotas for the 3 years 1947, 1948, and 1949. When a similar referendum was held in 1943, 92.8 percent of the voters favored 3-year quotas.

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NATIONAL FARM GOALS ANNOUNCED

National farm production goals calling for another year of top production were announced on November 8 by the Secretary of Agriculture. The goals look to a total of 358.5 million acres, of which 297.5 million are for cultivated crops and the remainder for hay crops. These totals exceed 1946 actual acreages by about 3 percent, and are about 2 million acres smaller than the goals farmers were asked to meet this year.

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CITRUS FRUITS

Plans are being made in California for large-scale inspection (U.S. grade and standard basis) of fresh oranges for processing.... Revised standards on canned orange juice and canned grapefruit juice have been issued.

Those Disappearing Food Orders

By Grace E. M. Waite

Wartime controls over food distribution are rapidly becoming a thing of the past. During October, 16 War Food orders were plucked off the list in one swoop and the commodities under 12 more were decontrolled. It is expected that others will be struck from the books in the not-too-distant future as we swing back in the direction of a normal peacetime economy.

154 Terminations

Altogether, 154 out of a total of 178 War Food orders issued have been terminated by the U. S. Department of Agriculture. During October, controls were removed from meat, evaporated milk, dried skim milk, canned fish and shellfish, processed fruits and vegetables, grain (its distribution and use, under WFO 145), barley, protein meal and soybean products, fats and oils (with the exception of WFO 130 on peanuts), honey, black and white pepper and nutmeg, and tobacco.

Terminations also included orders covering delegation of authority to the Secretary of the Interior for fish production and processing; delegation of authority to OPA for slaughter controls and rationing of processed foods, fats, oils, cheese, and meat; regulations governing requisition and disposal of food; and limitations on refrigerated food storage facilities.

Here are a few late figures. A total of 52 orders were in effect on October 1. By November 1, the total had shrunk to 24. Two of these, WFO 10 (rice) and WFO 44 (fish) continue as active set-aside orders. Set-aside orders on butter (WFO 2), Cheddar cheese (WFO 15), and wheat and flour (WFO 144) are now inactive. Twelve other orders remain on an assortment of commodities, notably grain for distillers, and sugar and molasses.

Also remaining are four food orders that delegate to OPA authority for food rationing in this country, Alaska, Hawaii, Puerto Rico, the Virgin Islands, and the Panama Canal Zone, with a separate delegation of priority or allocation orders and regulations. WFO 63, controlling food imports, and WFO 71, covering food priorities, continue in effect.

Food Distribution orders, later known as War Food Orders, stemmed from broad authority granted the President under the Second War Powers Act. Authority to control food distribution then was delegated by the President to the Secretary of Agriculture, who was empowered to "assign food priorities and make allocation of food for human and animal consumption to governmental agencies and for private account, for military, other governmental, civilian, and foreign needs."

In the summer of 1942, a group of Department economists sat down to the solemn business of estimating wartime food requirements and planning

the control and distribution of food supplies. After appraising the available food supply and carefully considering the probable needs of the armed forces, civilians, and our allies and others engaged in the direct war effort, proportionate supplies of food were calculated for each group of claimants. Allocations were planned on the basis of the best estimate that could be made of the nutritional requirements of the armed services and civilians, with as much food as we could spare to help meet the needs of our allies and other direct war claimants.

Food Orders and Rationing

Inasmuch as food commodities normally pass through the hands of the various processors and distributors, it was necessary to institute controls through processing channels to equalize, and, when necessary, to limit distribution to fit the ever-changing pattern of supply and demand, and to make sure that enough was available for Government procurement. These controls were the War Food orders.

At the consumer level it was necessary to stretch the civilian supply over specified periods to prevent unequal distribution and hoarding. This was the food rationing system administered by the Office of Price Administration.

Thus the cordon of controls--allocations, War Food orders, and rationing--was complete.

War Food Order 1 was the so-called bread order (see p. 21), designed to conserve milk, sugar, and shortening and prevent uneconomical practices in bakery products manufacture and distribution. One of its important provisions required the enrichment of white bread and rolls with prescribed amounts of thiamine, niacin, riboflavin, and iron--to put back into bread some of the valuable food elements extracted in the milling of white flour. Although this order was terminated recently, the enrichment provision it contained--now carried on on a voluntary basis by most bakers--would make an important contribution to the nutrition of future generations of Americans if it were amplified to cover all white flour and refined cereals, and given permanent status through appropriate legislation.

Other food distribution orders followed close on the heels of WFO 1 and covered a variety of products. Altogether, the Department issued 46 orders during the 12-month period ended June 30, 1944. Some of them provided for the setting aside of such important foods as meat, milk, fish, and canned and processed fruits and vegetables. Other orders were issued to regulate the use of marketing facilities and the distribution of farm machinery and equipment.

Always, the Department watched the food supply and the needs of claimants, and through amendments made the adjustments necessary to fit supply to demand. That could mean adding a little more to a processor's quota during the next month or quarter, or buying for the Army when the

supply was highest, or clapping on a new order when danger signals appeared on the horizon of a particular commodity.

In February 1943, the Department made effective various delegations of authority in connection with food rationing in the United States and its Territories. Executive Order No. 9280, dated December 5, 1942, had directed the Secretary to assume full responsibility for the control of the Nation's food program. This responsibility included a determination of the time, extent, and other conditions of civilian rationing.

The Department of Agriculture was responsible for determining and allocating food supplies available for civilian consumption and for making seasonal and other adjustments in the flow to consumers. Taking it from there, OPA was responsible for food rationing techniques and procedures, data collection, public information, and enforecement.

As of August 1, 1945, at the height of the war effort, the number of War Food orders outstanding rose to a peak of 94 (166 orders had been issued). The total dropped sharply to 69 as of September 1,1945, after the war with Japan had ended. The total dropped to 51 by January 1, 1946; it rose to 54 by June 1, where it remained until September 1.

Famine Emergency Program

Outstanding among all the orders during and after the war were the grain orders. During the famine emergency program the items shipped for relief purposes included dairy products, meats, fats and oils, and other commodities, but wheat and wheat products were needed most.

The call for famine relief came urgently while we were still at war with Japan. Could we meet our commitment of 225 million bushels? With 1,123 million bushels from the 1945 crop and a carry-over of 281 million bushels, we thought we could.

Food demands increased when drought struck in the Mediterranean areas, the Danube Basin, South Africa, India, Argentina, and Australia. Commitments for the United States finally rose to 400 million bushels of wheat to be exported during the year ended June 30, 1946. But our goal was 417 million bushels.

The President issued a statement calling for public cooperation and Government action to conserve wheat and wheat products. Under WFO 144 the manufacture of flour of less than 80 percent extraction was prohibited, wheat export controls were tightened by the licensing of exporters, and the wheat inventories of mixed-feed manufacturers and the flour inventories of food manufacturers and distributors were limited. Wheat merchandisers and country shippers were required to offer for sale to the Government all wheat not covered by preference orders.

The use of wheat or wheat products was prohibited in the manufacture of distilled and malted beverages, and the use of all other grains for

that purpose was restricted. Distillers' inventories of grain were cut. Millers were required to cut flour production for domestic consumption to 75 percent of 1945 distribution. Food manufacturers were reduced likewise in their use of wheat.

USDA bought wheat from farmers for immediate delivery to the Commodity Credit Corporation at the market price on any later date, up to March 31, 1947, that the seller might elect. Later, a bonus of 30 cents a bushel on wheat was offered under this plan.

Set-asides also expedited the procurement of meats, lard, cheese, and evaporated and powdered milk for famine relief.

Order Enforcement

Limitations and set-aside orders (which make up the majority of War Food orders) each carry a penalty clause under which violations may be dealt with.

It has been the Department's policy to promote as full an understanding as possible of each order at the time it was issued, by distributing printed copies of the order and supplying information to the trade affected. Department representatives held meetings with industry and trade groups. Educational methods have brought about a better understanding of the orders, increased the cooperation of trade groups, and straightened out many an unwitting offender.

Violations may lead to administrative, civil, or criminal proceedings. Examples of administrative action are warning letters and suspension orders. Violators whose actions were not willful may be permitted to make up for their lapses. But willful violators, subject to criminal prosecution, sometimes receive heavy fines. Recently a violator of WFO 75 was fined $24,000 for not coming forward with his part of the beef and pork.

The orders that have required considerable compliance activity include WFO 1 (bakery products); WFO's 13 and 149 (cream); WFO 42, 42a, and 42b (fats and oils), and WFO 75 (livestock and meats).

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GILMER TO SERVE AS ACTING PMA ADMINISTRATOR

Jesse B. Gilmer, deputy administrator of the Production and Marketing Administration, who has been on leave of absence since last July, returned to active duty on November 12. As depty administrator, he will serve as acting administrator of PMA pending the appointment of an administrator by the Secretary of Agriculture. Robert H. Shields, former administrator, resigned as of October 31.

Research Advisory Committee Named

The appointment of an 11-man National Advisory Committee provided for in the recently enacted Research and Marketing Act of 1946 was announced by Secretary of Agriculture Clinton P. Anderson on October 24. The committee members are: H. E. Babcock, Fred Bailey, Robert Coker, John H. Davis, Charles F. Kettering, C. W. Kitchen, Albert Mitchell, James G. Patton, Walter L. Randolph, H. J. Reed, and Kerr Scott.

The committee was appointed in preparation for an expanded program of agricultural research and marketing services as directed by Congress. It will consult with the Secretary of Agriculture, whom the act names as its chairman.

In addition, special committees are expected to be set up to help in developing research and marketing programs for particular fields, commodities, or subjects.

Congress passed the legislation just before adjournment, and no funds have been appropriated yet under the authorization. Planning and administering the program will require the cooperation of many Federal and State agencies and private industry as well as farm groups.

Biographical Sketches of Committee Members

Howard E. Babcock, Ithaca, N. Y., operates extensive poultry and stock farms from his residence at "Sunny Gables" near Ithaca and is a contributor to agricultural journals. He is also chairman of the board of trustees of Cornell University. Following his graduation from Syracuse University in 1911, he was a teacher and county agent in New York, was secretary and then State director of the New York State Farm Bureau Federation between 1915 and 1919, and during World War I served on the New York State Food Conservation Committee. From 1922 to 1937 he was general manager of the Grange League Federation Exchange, and also served as director of research for the federation. He served as assistant chairman of the Federal Farm Board in 1933, and was director of the Central Bank for Cooperatives from 1933 to 1939.

Fred Bailey, Washington, D. C., is legislative counsel for the National Grange. Born on a farm, he graduated in journalism at the University of Missouri in 1927. He was with the United Press Association for more than 15 years, serving as its farm editor and covering the Department of Agriculture from 1936 until his resignation in 1943. In 1944 he established the Agricultural Service Associates, Inc., and in June 1945 assumed his present position with the National Grange. He is the Washington correspondent of the Country Gentleman and other farm publications.

Robert T. Coker, Hartsville, S. C., is vice president of Coker's Pedigreed Seed Company, scientific breeders of improved cotton, small grains, and other farm crops and an officer of banking, mercantile, and cottonseed oil firms in Hartsville. A graduate of the University of South Carolina, he is chairman of the production and marketing committee and a special advisor to the board of directors of the National Cotton Council.

John H. Davis, Washington, D. C., has been executive secretary of the National Council of Farmer Cooperatives since 1944. Brought up on a Missouri farm, he majored in agricultural economics at Iowa State College and then did graduate work at the University of Minnesota. For a time he taught and served as school administrator in various Iowa communities. Between 1936 and 1944, he was with the Department's Farm Credit Administration and the Commodity Credit Corporation. He was chief of CCC's grain division when he resigned to join the National Council of Farmer Cooperatives.

Charles F. Kettering, Dayton, Ohio, is general manager of the Research Laboratory Division, General Motors Corporation. He is a graduate of Ohio State University and has received numerous honorary degrees. As an engineer and inventor, he has made many inventions affecting agriculture. One of these was the Delco light system for lighting farm houses. He is associated with several business firms and is chairman of the National Inventors Council, which screens suggestions and inventions aiding the armed forces.

C. W. Kitchen, Washington, D. C., is executive vice president of the United Fresh Fruit and Vegetable Association. Before his resignation in February 1946 he had served in the U. S. Department of Agriculture for more than 34 years in various responsible positions, all associated with marketing problems. He played a leading p rt in the establishment and development of many research and service programs that resulted in increased economy and efficiency in marketing agricultural products. When he resigned, he was assistant administrator of the Production and Marketing Administration.

Albert K. Mitchell, Bell Ranch, New Mex., is manager and co-owner of the 470,000-acre Bell Ranch in New Mexico. He attended Occidental College, Los Angeles, Calif., and Cornell University, Ithaca, N. Y. A student of livestock problems, particularly marketing, he is a member of the New Mexico Cattle Growers Association and has served as president of the American National Livestock Association, director of the National Livestock and Meat Board, and a member of the New Mexico Cattle Sanitary Board.

James G. Patton, Denver, Colo., is president of the National Farmers Union. After early work with the Western State College of Colorado at Gunnison and in a private insurance business, he became active in the organization of the Colorado Farmers Union, as executive secretary and later as president. He became a director of the National Farmers Union

in 1937 and advanced to its presidency in 1940. He also serves in executive capacity in several of its subsidiaries.

Walter L. Randolph, Fayette, Ala., is president of the Alabama Farm Bureau Federation. Reared on a farm near Fayette, he received a B. S. degree in agriculture in 1925 from Alabama Polytechnic Institute at Auburn, Ala., and did graduate work at University of Virginia. His experience includes work on the Progressive Farmer, as extension editor in Alabama, and service with AAA adjustment programs. He resigned his position as assistant director, Southern Division, AAA, in January 1941 to accept his present office.

H. J. Reed, West Lafayette, Ind., is dean and director of the Purdue University School of Agriculture and the Agricultural Experiment Station, and has been director of agricultural extension since 1939. He graduated from Purdue in 1911, was a county agent for 3 years, and advanced to his present position after joining the Purdue faculty in 1916.

Kerr Scott, Raleigh, N. C., has been State Commissioner of Agriculture in North Carolina since his election in 1936. A 4-year honor student and athlete at North Carolina State College, he received the B. S. degree in agriculture there in 1917 and served as county farm agent in Alamanse County from 1920 to 1930. He has been prominent in the work of the American Jersey Cattle Club, the North Carolina Dairymen's Association, and North Carolina State Grange, and is a pioneer in rural electrification work in his State. He won the Progressive Farmer award as "man of the year" in 1937. He operates a large dairy farm in Alamanse County.

GRAIN

Surplus steel airplane landing mats that will provide emergency storage for an estimated 7½ million bushels of corn are now ready to move, or are already moving, to 7 Corn Belt States from Kankakee, Ill. The War Assets Administration recently awarded the mats to 40 bidders, selling 4,196,262 square feet for $125,887. The mats were set aside for emergency corn storage after USDA certified that food production was threatened.... A new industrial use for wheat has appeared in the announcement by the American Molasses Company of its preparations to produce more than 2½ million pounds of sirup from wheat.... A "Suggested Uniform State Seed Law" has been revised and distributed to State officials. The revision, which requires more nearly complete labeling with respect to noxious weed seeds, had been approved by the Association of Commissioners, Secretaries, and Directors of Agriculture; the Seed Analysts' Association; and the legislative committee of the American Seed Trade Association. The revised suggested law will be included in bills sponsored by the Council of State Governments.

APPLE JUICE NOW BIG BUSINESS

"Sorry, but we're out of the cider-making business."

That's how Dr. Marshall's cider customers are being answered at Michigan State College this fall.

There was a time when cider was just cider. It came from poor grades of apples, and to tell the truth it didn't stand any higher than it should in polite society.

But all the apples grown can't be large, red, and shiny, no matter how sound they are. What about them--should we throw them away?

That was where Dr. R. E. Marshall came in.

A member of Michigan State's horticulture department, he visioned a superior and standardized product made from those good apples, and he chose to call it "apple juice" instead of cider. Year after year he worked on his idea in the laboratory at East Lansing, trying various methods of processing, filtering, and clarifying, using different varieties and grades of apples, testing, tasting ...

But tasting by one man wasn't enough, Dr. Marshall knew.

Then came the days when students and the East Lansing people were able to buy apple juice at the college and serve as human guinea pigs as well. They said which batches and tastes they preferred.

Out of it came a process for making apple juice through which more than half a million bushels of small, poorly colored, or slightly blemished Michigan apples are utilized each year. And the process has been so successful in other States as well that in 1944 more than 2½ million bushels of apples were used in the 3-million-case national pack.

So Michigan State College is sorry, but it isn't in the juice business this fall. It has left that to private industry and turned to other research.

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TRANSPORTATION

An easing of the tight rail transportation situation is hoped for in the last half of November and through December. This usually comes at this time of year because commercial shipments decline after merchants stock up for Christmas and because buying is light until after inventories have been taken. Such a lull, if it happens, will make more car space available for the hauling of agricultural produce and supplies.

White Bread Enrichment

By Philip Talbott

What kind of white baker's bread do you like best?

Crisp, buttered toast with your eggs for breakfast? Sliced bread or buns for lunch? Or those hot pan rolls for dinner?

No matter which, you can be sure that white bread, properly enriched, brings you some of the important health-giving, energy-building nutrients that every man, woman, and youngster requires.

The wholesome, enriched white bread you eat today owes much to the long, hard, and successful efforts of uncounted chemists, millers, and forward-looking members of the baking industry. Some flour manufacturers and bakeries began to enrich white bread with vitamin concentrates and other nutrients a long time before the war. These and other industry members joined forces with the Government during the war to bring enriched bread to all the people. The proper enrichment of white bread and rolls became one of the requirements, for all bakeries, of a War Food order that became effective early in 1943.

What was the result?

For almost 4 years everyone in the United States had the assurance that his bakery was operating under the requirement of adequate enrichment for his white bread and rolls.

Successful Program

The bakery industry as a whole did a splendid job on this program that required the people's bread to have the best that science, industry, and agriculture could give. The program was a success.

How do we know this?

Because USDA's Production and Marketing Administration kept a check on bread enrichment. Samples were picked up from store to store. In the year that ended with last June, for example, samples of white bread and rolls from more than 2,000 bakeries throughout the country were collected and analyzed in laboratories.

The results showed that the great majority of U. S. bakers were adequately enriching the white bread and rolls--either by putting specified quantities of vitamin concentrates into the dough, or by using flour already enriched.

As was to be expected under a Nation-wide and relatively new program such as this, some bakers who tried to do the enrichment job right

did not manage it at first. But most of these were soon set right. There were other bakers, a few of them, who persistently violated the law in spite of warnings, and these had to be prosecuted, the penalties running to several thousand dollars in fines and a number of years of suspended jail sentences.

The results of the willful violations were unfortunate for the individual violators concerned, but millions of bread consumers got the results of industry-Government cooperation designed to bring to the American dinner table the most wholesome and nutritious white bread and rolls possible to have.

Routine

The Government program was a wartime measure. War Food Order 1 was terminated on October 25, 1946. But the bread enrichment effort, begun before the war by the industry members themselves and carried forward during the war under Government auspices, received a tremendous impetus. Enrichment became routine for thousands of bakeries.

During the war and afterward, the legislatures of 19 States with the cooperation of bakery industry members passed laws that required white bread enrichment as a permanent, peacetime measure. Prospects for such legislation in other States are good. The State legislatures have followed WFO 1 almost exactly in setting up their enrichment requirements. Some of them have gone farther, and require the enrichment of all white flour sold for home use.

Perhaps the actions of Federal judges on the bench also indicate the trend. A year or so ago, when violations of the bread enrichment order came before U. S. courts, the fines averaged about $100. This year the average is up to about $150.

Through white bread enrichment the typical bread consumer has been getting an important part of his needed supply of food energy, his nutrients. Specifically, bread enrichment has been providing an estimated 10 to 20 percent of the country's per capita supplies of riboflavin, iron, niacin, and thiamine. Most of us would consider 10 to 20 percent of our teeth, say, or our eyesight, as pretty important personal assets... assets we would be alarmed at the prospect of losing.

But fortunately we probably don't need to worry. Most bakers have stated their intention of going right ahead with the enrichment job on their own. They see it as just good business.

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The pepper industry reports that no export licenses have been granted as yet by the Government of India. Strikes in India may hold up shipments even after licenses are granted.

ABOUT MARKETING:

The following addresses and publications, issued recently, may be obtained upon request. To order, check on this page the publications desired, detach and mail to the Production and Marketing Administration, U. S. Department of Agriculture, Washington 25, D. C.

Addresses:

The First Years of Peace, by Clinton P. Anderson, Secretary of Agriculture, Washington, D. C. October 7, 1946. 9 pp. (Mimeographed)

Goals, Price Supports, and the Outlook, by Robert H. Shields, Production and Marketing Administrator, Washington, D. C. October 9, 1946. 3 pp. (Mimeographed)

Developing the National School Lunch Program, by Robert H. Shields, Production and Marketing Administrator, Washington, D. C. October 22, 1946. 5 pp. (Mimeographed)

Action Programs To Improve Nutrition, by Robert H. Shields, Production and Marketing Administrator, Washington, D. C. October 9, 1946. 6 pp. (Mimeographed)

World Nutrition Situation, by Hazel K. Stiebeling, Chief, Bureau of Human Nutrition and Home Economics, Washington, D. C. October 9, 1946. 6 pp. (Mimeographed)

Publications:

Milk Products: Costs, Prices, and Profits of War Food Purchases. (PMA) September 1946. 72 pp. (Multilithed)

Livestock, Meats, and Wool Market Statistics and Related Data for 1945. CS-19. (PMA) September 1946. 85 pp. (Multilithed)

Annual Report on Tobacco Statistics for 1946. CS-20. (PMA) September 1946. 62 pp. (Multilithed)

Agricultural Outlook Charts for 1947. Book 1. (Bureau of Agricultural Economics) October 1946. 40 pp. (Multilithed)

Harvesting the Hay Crop. FM-57. (Bureau of Agricultural Economics) April 1946. 22 pp. (Multilithed)